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ordinary soil and surrounded by an oxyhydrogen atmosphere containing some carbonic acid, a film will develop which represents the growth of the two species of *Hydrogenomonas*, *vitrea* and *flava*. Through the mutual activity of those two species of bacteria constituting the film, the carbonic acid is reduced and hydrogen is oxidized. Each of those organisms is capable of heterotropic feeding, but *vitrea* is unable to develop upon a series of substances which afford suitable food for *flava*. The reason why neither organism can alone develop in the oxyhydrogen atmosphere is that it cannot endure the high tension of the oxygen, for which limit for injurious effect is close to 53 mm. pressure. Free hydrogen is more or less protected against oxidation by those organisms by organic substances which have a food value for them. The author ventures the opinion that in the presence of carbonic acid the hydrogen is used to form compounds with the carbonic acid which are in turn oxidized.—RAYMOND H. POND.

Reduction.—ZALESKI[13] makes a study of the reduction processes in plants. A brief review of the literature on the subject is followed by a number of experiments. Methylene blue was used as the agent to be reduced. He finds a parallel between the reduction activity and alcoholic fermentation. The main evidence of such a parallel is shown by the fact that various acids, bases, and salts affect similarly the two processes, and plant organs in general show the two processes in a like degree. He points out the fact that we do not know the agent that causes such reductions. It may be an enzyme, reductase or hydrogenase, or it may be a chemical compound capable of absorbing oxygen. One quickly sees the need of a master mind in this field, a person who can use exact chemical methods rather than haphazard ones.

KORSAKOW[14] finds that sodium selenate stops the action of zymase in killed yeast-"zymin"; while it greatly increases its activity in living yeast. This agrees with the effect PALLADIN[15] found that ether and other poisons had on CO_2 (respiratory) production in higher plants. While the selenate stopped the fermentative activity of the dead yeast, it did not modify its reductive power, as shown by the deposit of selenium. Hence it is argued that the two processes are independent, in contrast to ZALESKI's contention.—WILLIAM CROCKER.

Evaporation in marsh vegetation.—Investigating the atmospheric factors in herbaceous marsh vegetation by means of thermometers and a modification of the porous cup atmometer, YAPP[16] demonstrated a marked stratification in the vegetation with different conditions in the different strata. In vegetation with an average height of five feet, the average rate of evaporation above the herbage, about the middle of it, and in the lower strata, was according to the ratios 100:32.8:6.6. Similar vegetation about two feet high gave corresponding ratios of 100:56.2:14.7. These ratios are valuable indications of comparative humidity within the vegetation and upon its surface. Temperature readings showed that the upper layers of the vegetation were exposed to a greater daily range of temperature than either the free air above or the lower layers of the vegetation. As the different species vary much in their average height, it will be seen that few species of plants forming the marsh vegetation have to face precisely the same set of physiological conditions, hence xerophytic and non-xerophytic marsh plants may grow side by side, each in the different conditions suited to its requirements.—GEO. D. FULLER.

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[13] ZALESKI, W., Ueber die Rolle der Reduktionprozesse bei der Atmung der Pflanzen. Ber. Deutsch. Bot. Gesell. **28**:319–329. 1910.

[14] KORSAKOW, MARIE, Ueber die Wirkung des Natriumselents auf die Ausscheidung der Kohlensäure lebender und abgetoteter Hefe. Ber. Deutsch. Bot. Gesell. **28**:334–338. 1910.

[15] PALLADIN, W., Zur Physiologie der Lipoide. Ber. Deutsch. Bot. Gesell. **28**:120–125. 1910.

[16] YAPP, R. H., On stratification in the vegetation of a marsh and its relation to evaporation and temperature. Annals of Botany **23**:275–320. 1909.

Catalase.—ROSENBERG[17] attempts to settle the question whether catalase belongs to the anaerobic or aerobic respiratory enzymes. She finds it in great abundance in seeds and seedlings showing low anaerobic and high aerobic respiration. In yeast it decreases with fermentative activity. In seeds it increases as germination progresses. Acids and most salts markedly diminish its activity, while 0.5 per cent Na_2HPO_4 and K_2HPO_4 and 0.25 per cent Na_2CO_3 greatly increase it. From these facts she concludes that catalase belongs to the aerobic respiratory enzymes. There are two serious criticisms that must be offered against the work. The destructive effect of acids on catalase and the rapid development of such acids in dead plant tissues is well established. Her methods apparently entirely overlooked these facts. It is probable, therefore, that she was measuring only a fraction of the entire catalase, and therefore that her determinations were open to large error. Again, her conclusion is rather sweeping for the data at hand. Biology can gain nothing from such guessing on the basis of questionable data.—WILLIAM CROCKER.

Embryo of Welwitschia.—PEARSON[18] has added to his former studies of *Welwitschia* a brief account of the development of the embryo proper. The small group of embryo initials at the tip of the suspensor first develops into a "massive meristematic group" of cells, in which the growing points of the embryo are organized, much as in *Ginkgo*, even the "lateral cones" being visible as small protuberances in the axils of the cotyledons. The suspensor increases in thickness greatly by centrifugal additions from superficial cells of the root cap, as in *Ephedra*. The whole intraseminal development of the embryo seems to be completed before the seed falls, and covers a period of about four months from the time of fertilization. A few seeds collected in 1907 germinated in 1910.—J. M. C.

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[17] ROSENBERG, ANNA, Ueber die Rolle der Katalase in den Pflanzen. Ber. Deutsch. Bot. Gesell. **28**:280–288. 1910.

[18] PEARSON, H. H. W., On the embryo of *Welwitschia*. Annals of Botany **24**:759–766. *pl. 64*. 1910.